GAO

United States
General Accounting Office
Washington, D.C. 20548

National Security and
International Affairs Division

B-249793.1

September 25, 1992

DTIC
ELECTE
OCT 28 1992
S D
E

The Honorable John P. Murtha
Chairman, Subcommittee on Defense
Committee on Appropriations
House of Representatives

Dear Mr. Chairman:

As you requested, we reviewed the Army's efforts to implement the Army Tactical Command and Control System (ATCCS) program. This is an update of our previously issued report[1] that provided the status, schedule, and costs of the ATCCS programs through December 1990.

Background

The ATCCS program is the Army's comprehensive approach to automating its tactical command and control systems and improving its communications systems. This effort, at a cost of over $20 billion, is designed to enhance the coordination and control of combat forces through automated management of five key battlefield functional areas: (1) field artillery, (2) tactical intelligence, (3) combat service support, (4) forward area air defense, and (5) maneuver control. ATCCS is comprised of nine segments—five command and control segments, three communications segments, and one common hardware and software segment to provide computer commonality.

Results in Brief

From December 1990 through June 1992, program schedules changed for seven of the nine segments that comprise ATCCS; six segments slipped and one segment was accelerated. The changes were primarily due to alignment of segment schedules, test site availability, software development problems, and integration of existing capabilities. The remaining two segments have stayed on schedule. Currently, the segments are in various stages of development and acquisition, ranging from full-scale development to fielding.

92-28226

DISTRIBUTION STATEMENT
Approved for public release
Distribution Unlimited

[1]Battlefield Automation: Army Tactical Command and Control System's Schedule and Cost (GAO/NSIAD-91-118BR, Apr. 15, 1991).

Army estimates show that since 1990 consolidated ATCCS costs decreased from $23.3 billion to $20.5 billion,[2] a decrease of $2.8 billion. This change includes a decrease of $3.0 billion for six segments, offset by an increase of $208 million for one segment. The large decrease is due to Army force structure reductions and termination of program components in response to the reduced Soviet threat. The increase was due to the revision of a segment's cost estimate to reflect full program system requirements.

We have previously reported on our concerns about the Army's strategy for testing and procuring ATCCS.[3] Specifically, we are concerned with the, (1) Army's plan to initiate ATCCS procurement without demonstrating the automated exchange of data among all segments, (2) lack of time available for training test unit personnel, and (3) acquisition strategy that defers system functions and increases logistical support costs.

Scope and Methodology

To determine the ATCCS program's progress and status, we reviewed acquisition plans, cost estimates, schedules, test plans, and other pertinent documents. We discussed estimated costs, schedule, and performance for each segment of the program with officials at the

- ATCCS program offices in Huntsville, Alabama; McLean and Fort Belvoir, Virginia; and Fort Monmouth, New Jersey;
- Army test and evaluation agencies in Aberdeen, Maryland; and Alexandria, Virginia;
- Office of the Secretary of Defense for Command, Control, Communications and Intelligence; and Director, Operational Test and Evaluation, Washington, D.C.;
- Combined Arms Center, Fort Leavenworth, Kansas; and
- ATCCS system engineering and integration contractor, Fort Washington, Pennsylvania.

We performed our review from February 1992 to June 1992 in accordance with generally accepted government auditing standards.

[2]Since our 1990 report, the Army declassified the intelligence electronic warfare system—All Source Analysis System—acquisition cost estimates. The ATCCS program cost estimates have been adjusted to reflect the declassified cost data.

[3]Battlefield Automation: Planned Production Decision For Army Control System Is Premature (GAO/NSIAD-92-151, Aug. 10, 1992).

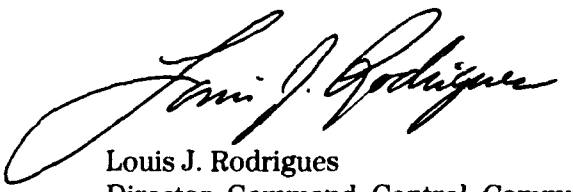
We did not obtain written agency comments. However, we discussed a draft of this report with Department of Defense and Army officials and have included their comments where appropriate. Appendix I provides an overview of the ATCCS program's schedule and cost, and appendix II contains additional details on the various segments that comprise ATCCS.

Subsequent to our meeting with agency officials, the Department of Defense determined that the All Source Analysis System acquisition cost estimates are unclassified data. We revised the report to include the unclassified data.

Unless you publicly announce its contents earlier, we plan no further distribution of this report until 10 days from the date of this letter. At that time, we will send copies to interested parties and make copies available to others on request.

Please contact me on (202) 275-4841 if you or your staff have any questions concerning the report. Major contributors are listed in appendix III.

Sincerely yours,



Louis J. Rodrigues
Director, Command, Control, Communications,
and Intelligence Issues

DTIC QUALITY INSPECTED 1

Accesion For	
NTIS CRA&I	X
DTIC TAB	☐
Unannounced	☐
Justification	
By	
Distribution /	
Availability Codes	
Dist	Avail and / or Special
A-1	

Contents

Letter 1

Appendix I Overview of the Army Tactical Command and Control System's Program Schedule and Cost Changes 6
Schedule Changes 8
Changes in Cost Estimates 10

Appendix II ATCCS Program Profiles 11
Advanced Field Artillery Tactical Data System 11
All Source Analysis System 12
Combat Service Support Control System 13
Forward Area Air Defense Command, Control, and Intelligence 14
Maneuver Control System 15
Common Hardware and Software 17
Army Data Distribution System 19
Mobile Subscriber Equipment 20
Single Channel Ground and Airborne Radio System 21

Appendix III Major Contributors to This Report 23

Tables
Table I.1: ATCCS Program Status As of June 1992 8
Table I.2: Changes in ATCCS Acquisition Schedules From December 1990 Through June 1992 9
Table I.3: Changes in ATCCS Acquisition Cost Estimate From December 1990 Through June 1992 10
Table II.1: Change in AFATDS Program Acquisition Cost Estimate From December 1990 Through June 1992 11
Table II.2 Change in ASAS Program Acquisition Cost Estimate From December 1990 Through June 1992 13
Table II.3: Change in CSSCS Program Acquisition Cost Estimate From December 1990 Through June 1992 14

Table II.4: Change in Forward Area Air Defense Command, Control, and Intelligence Program Acquisition Cost Estimate From December 1990 Through June 1992 15
Table II.5: Change in Maneuver Control System Program's Acquisition Cost Estimate From December 1990 Through June 1992 17
Table II.6: Change in CHS Program Acquisition Cost Estimate From December 1990 Through June 1992 19
Table II.7: Change in Army Data Distribution System Program Acquisition Cost Estimate From December 1990 Through June 1992 20
Table II.8: Change in Mobile Subscriber Equipment Program Acquisition Cost Estimate From December 1990 Through June 1992 21
Table II.9: Change in SINCGARS Program Acquisition Cost Estimate From December 1990 Through June 1992 22

Figure

Figure I.1: ATCCS Architecture and Battlefield Functional Areas 7

Abbreviations

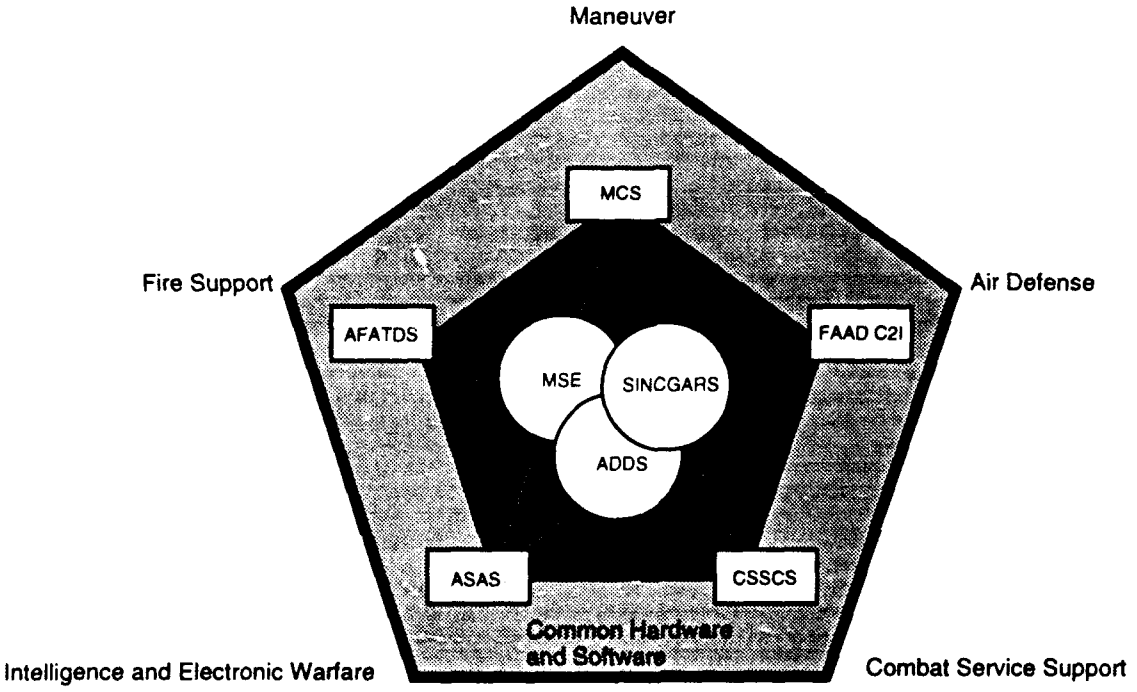
ADDS	Army Data Distribution System
AFATDS	Advanced Field Artillery Tactical Data System
ASAS	All Source Analysis System
ATCCS	Army Tactical Command and Control System
CHS	Common Hardware and Software
CSSCS	Combat Service Support Control System
EPLRS	Enhanced Position Location Reporting System
FAAD C2I	Forward Area Air Defense Command, Control, and Intelligence
JTIDS	Joint Tactical Information Distribution System
MCS	Maneuver Control System
MSE	Mobile Subscriber Equipment
SINCGARS	Single Channel Ground and Airborne Radio System

Overview of the Army Tactical Command and Control System's Program Schedule and Cost Changes

Army Tactical Command and Control System (ATCCS), one of the Army's highest acquisition priorities, is intended to enhance the Army's warfighting capabilities by automating its command and control and improving its communications capabilities. When ATCCS is fielded in the 1990s, the Army estimates that it will have spent over $20 billion for an integrated network of computers, radios, and other equipment. ATCCS is intended to help battlefield commanders, from the corps down to the battalion, manage and control their resources more effectively.

ATCCS consists of five major command and control segments: (1) Advanced Field Artillery Tactical Data System (AFATDS); (2) All Source Analysis System (ASAS); (3) Combat Service Support Control System (CSSCS); (4) Forward Area Air Defense Command, Control, and Intelligence (FAAD C2I); and (5) Maneuver Control System (MCS). These segments will be linked together by three communications segments: (1) the Army Data Distribution System (ADDS), which has two parts, the Enhanced Position Location Reporting System (EPLRS) and the Joint Tactical Information Distribution System (JTIDS); (2) the Mobile Subscriber Equipment (MSE); and (3) the Single Channel Ground and Airborne Radio System (SINCGARS). (See fig. I.1.)

Figure I.1: ATCCS Architecture and Battlefield Functional Areas



Battlefield Functional Areas

ADDS	Army Data Distribution System	FAAD C2I	Forward Area Air Defense Command, Control and Intelligence System
AFATDS	Advanced Field Artillery Tactical Data System	MCS	Maneuver Control System
ASAS	All Source Analysis System	MSE	Mobile Subscriber Equipment
CSSCS	Combat Service Support Control System	SINCGARS	Single Channel Ground and Airborne Radio System

Source: U.S. Army

The Common Hardware and Software (CHS) segment will initially provide the computers for four of the five major command and control segments[1]. The goal for CHS is to reverse the proliferation of unique computer systems and enhance interoperability between the command and control segments.

[1]In 1986, the Army exempted the All Source Analysis System from the CHS acquisition because of its security requirements and advanced stage of development using a programming language that is different from the one ATCCS uses.

Prior to the establishment of the ATCCS program in the mid 1980s, the segments that comprise ATCCS were initiated as independent development projects. Currently, the segments are in various stages of development and acquisition, ranging from full-scale development to fielding. Table I.1 presents an overview of each segment's current phase and the next major event in its acquisition cycle.

Table I.1: ATCCS Program Status as of June 1992

Segments	Current phase	Next major test/event	Scheduled date
Command and control			
AFATDS	Full-scale development	Developmental test	9/93
ASAS	Limited production	Operational test	9/92
CSSCS	Full-scale development	Operational test	5/93
FAAD C2I	Full-scale development	Developmental test	1/93
MCS (Non-CHS)	Fielding	None	
MCS (CHS)	Full-scale development	Operational test	5/93
CHS	Production	CHS II contract award	6/93
Communications			
ADDS-EPLRS	Limited production	System demonstration	4/93
ADDS-JTIDS	Full-scale development	Technical test	3/93
MSE	Production/fielding	None	
SINCGARS	Limited production	Second-source production decision	1/93

The Army is reviewing ATCCS requirements as a result of the dimished Soviet threat. The results of this review are ongoing and are not reflected in this report. This review could have dramatic effects on ATCCS. For example, the Army is considering terminating procurement of part of one communications segment. If implemented, this would increase the communications load on a less capable communications segment.

Schedule Changes

From December 1990 through June 1992, ATCCS schedules have changed for the five major command and control segments, CHS, and the ADDS-JTIDS component. MSE, SINCGARS, and the ADDS-EPLRS component have remained on schedule.

Table I.2 shows changes in major milestones of the current ATCCS acquisition schedules from December 1990 through June 1992. The selected milestones are the full-rate production decision and initial

operational capability. Table I.2 also shows the primary factors contributing to the changes.

Table I.2: Changes in ATCCS Acquisition Schedules From December 1990 Through June 1992

	Full-rate production			Operational capability			
	December 1990	June 1992	Change (months)	December 1990	June 1992	Change (months)	Army explanation
Command and control							
AFATDS	4/94	6/94	2	1/95	9/95[a]	8	Test site availability, fielding production equipment
ASAS	2/93[b]	11/97	57	9/95[c]	3/93[c,d]	(30)	Integration of existing capabilities
CSSCS	9/93	9/93	0	10/93	4/94[a]	6	Funding availability
FAAD C2I	9/93	6/93[e]	(3)	9/93[f]	9/93[f]	0	Reduced testing
MCS (CHS)	8/92	9/93	13	6/92[c]	9/94[a]	27	Software development problems
CHS I	8/88[b]	8/88[b]	0	6/89[g]	6/89[g]	0	On schedule
CHS II	1/93[b]	6/93[b]	5	3/93[g]	8/93[g]	5	Aligned with control segments
Communications							
ADDS-EPLRS	9/94	9/94	0	5/94[c]	5/94[c]	0	On schedule
ADDS-JTIDS	10/95	9/93	(25)	8/93[c,h]	9/93[c,h]	1	Army budget reduction, program realignment
MSE	12/85	12/85	0	5/88	5/88	0	On schedule
SINCGARS	12/90	12/90[i]	0	12/90	12/90	0	On schedule

[a]IOC date definition was changed by the Army and is now defined as completion of initial fielding after production decision.

[b]Full-rate production equates to production contract award.

[c]First unit equipped date is used instead of initial operational capability date.

[d]Initial fielding with limited configuration capability units.

[e]Production decision for limited rate production of equipment for light units.

[f]First unit equipped date for light divisions.

[g]Initial operational capability date equates to initial hardware delivery date since CHS is not a system.

[h]Initial fielding with engineering development model units.

[i]Second source production decision will follow operational test, currently scheduled for January 1993.

Changes in Cost Estimates

The Army's ATCCS cost estimate as of June 1992 was about $20.5 billion, about 9.5 billion for the five command and control segments and $11.0 billion for the three communications segments. (The CHS cost is included in the command and control segments' costs.) This represents a decrease of $2.8 billion from the Army's December 1990 estimate. As shown in table I.3, estimated costs decreased in all segments except the SINCGARS and the ADDS program due to Army force structure reductions, reduced cost of CHS hardware, terminated program components, and program restructure in response to the reduced Soviet threat and changed world situation. The radio system costs have remained unchanged, while those of the ADDS program increased due to the additional funding required to support the full JTIDS component requirements. (App. II contains the costs of each system.)

Table I.3: Changes in ATCCS Acquisition Cost Estimate From December 1990 Through June 1992

Dollars in millions

Segment	December 1990	June 1992	(Change)	Army explanation
Command and Control[a]				
AFATDS	$1,405.3[b]	$1,118.9	($286.4)	Force structure reduction, new requirement
ASAS[c]	5,813.6	5,334.0	(479.6)	Force structure reduction, program restructure
CSSCS	436.2	380.8	(55.4)	Receiving equipment from other program
FAAD C2I	3,361.8	1,649.9	(1,711.9)	Force structure reduction, terminated program components
MCS	1,436.8	1,011.8	(425.0)	Force structure reduction, unit cost reduction
Subtotal[c]	**$12,453.7**	**$9,495.4**	**($2,958.3)**	
ADDS	$3,158.0	$3,365.5	$207.5	Force structure reduction, program restructure, funds for complete system requirements
MSE	4,602.7	4,565.5	(37.2)	Force structure changes
SINCGARS	3,080.1	3,080.1	–	No change
Subtotal	**$10,840.8**	**$11,011.1**	**$170.3**	
Total[c]	**$23,294.5**	**$20,506.5**	**($2,788.0)**	

[a]Common hardware and software costs are included in the command and control segment costs estimates

[b]This cost estimate includes program costs not previously reported

[c]Since our 1990 report, the Army has declassified the All Source Analysis System costs. The estimates shown have been adjusted to reflect the declassified cost data

ATCCS Program Profiles

Most of the nine segments comprising ATCCS have experienced schedule changes as a result of one or more of the following: (1) software development problems, (2) adjustment of the test date due to test site availability, (3) program realignment, and (4) reduced testing. In addition, cost estimates for most of the segments have changed to reflect Army force structure reductions, termination of program components, introduction of a lightweight computer unit and full funding of requirements.

Advanced Field Artillery Tactical Data System

The AFATDS is being developed as the Army's new automated fire support command and control system. It is intended to automate fire support functions from corps down to the field artillery forward observers. It will also provide automated support for all fire support assets, including mortars, close air support, naval gunfire, attack helicopters, offensive electronic warfare, and field artillery cannons, rockets and guided missiles. This system will replace the outdated Tactical Fire Direction System.

Schedule and Status

The program has remained close to schedule. In April 1990, the Army awarded a 3-year, $60.5 million, full-scale development contract to Magnavox to upgrade and transfer the program software to CHS. The software design effort has proceeded into the detailed design phase. The Army now plans to make its full-rate production decision in June 1994, or 2 months later than estimated in December 1990 due to test site availability. The Army plans to achieve initial operational capability in September 1995.

Costs

Table II.1 shows the change in the Army's cost estimate for the program. The Army plans to procure 4,454 computers for AFATDS through fiscal year 2001, or 959 more than estimated in December 1990. This increase is due to the addition of new program requirements for a lightweight computer unit. Program costs have decreased due to the projected Army force structure reduction and conversion of some computer applications to a less costly lightweight computer configuration; however, buying additional lightweight computers, in part, offset the overall cost decrease.

Table II.1: Change in AFATDS Program Acquisition Cost Estimate from December 1990 through June 1992

Dollars in millions

December 1990	June 1992	Change
$1,405.3	$1,118.9	($286.4)

All Source Analysis System

The ASAS is the Army's portion of the former Joint Tactical Fusion Program, a joint Army and Air Force program to automate the correlation and analysis of high-volume, time-sensitive, intelligence data. The system is intended to automate the fusion of intelligence and combat information on the types of enemy units, as well as process information on their locations, movements, projected capabilities, and intentions. It is also intended to automate data analysis and provide a coherent picture of the enemy situation and disseminate this information to commanders so that they can make timely, well-informed decisions.

Schedule and Status

In June 1991, the Army restructured its program acquisition strategy in response to Army Chief of Staff guidance that an automated system capability be fielded as soon as possible. The restructure provides for fielding a hybrid system configuration consisting of ASAS hardware, which was previously procured for the terminated urgent deployment to Europe,[1] and existing intelligence processing capability known as Hawkeye, which was successfully deployed in Operation Desert Storm. Merging the Hawkeye capabilities into ASAS enhances targeting, situation analysis, signal intelligence analysis, collection management and imagery analysis capabilities, and reduces software development time. Limited fielding is now scheduled to start in March 1993, 30 months earlier than estimated in December 1990.

The restructure provides for the acquisition of a limited quantity of additional ASAS and Hawkeye hardware to meet the priority fielding requirements, and eliminates the development and procurement of the baseline system previously scheduled to enter full-rate production in February 1993. Full system capability is to be achieved through an evolutionary development program and software refinements based on direct user feedback. The Army plans to award a full-scale development contract in January 1993 to transition the hybrid system to CHS and enhance its capabilities. The full-rate production decision for this effort is scheduled for November 1997.

[1]The ASAS acquisition strategy provided for fielding a limited capability system to Europe based on the urgent need to counter the Soviet threat. The software of the limited system was then to be enhanced and additional limited systems were to be fielded. This was referred to as the baseline system. The final or objective system was to be a more capable system that used Ada software and common hardware. The development of Hawkeye, as well as the diminished Soviet threat, led to the merger of the limited system and Hawkeye. This change also resulted from the Army's desire to field a system sooner and an estimated savings of $170 million in acquisition costs.

Full system capability is to be achieved initially when the third software enhancement phase is completed in fiscal year 2002. The Army plans to complete fielding this capability in 2007.

Costs

Table II.2 shows the change in the Army's cost estimates for the program. The Army's current estimate is lower as a result of program restructuring and the projected Army force structure reduction. The cost estimate reflects the program restructure to a hybrid system configuration. The hybrid consists of ASAS hardware previously procured for the terminated urgent deployment to Europe and existing intelligence processing capability known as Hawkeye.

Table II.2 Change in ASAS Program Acquisition Cost Estimate from December 1990 through June 1992

Dollars in millions

December 1990	June 1992	Change
$5,813.6	$5,334.0	($479.6)

Combat Service Support Control System

The CSSCS is to automate the collection, analysis, and dissemination of logistical, medical, financial, and personnel information to theater, force level, and combat services support commanders.

Schedule and Status

The CSSCS entered full-scale development in February 1991 when the Army awarded a 5-year, $61.6 million contract to TRW, Inc., for the development and testing of fieldable software, and its integration with the CHS. The system will start user testing in September 1992, and operational testing in May 1993 which is 3 months later than planned in December 1990. Operational testing slipped in order to realign the previously scheduled February 1993 test date with the May 1993 test site availability. The full-rate production decision continues to be scheduled for September 1993; however, because procurement funding is not being requested until fiscal year 1994, an Army official stated that the Army does not anticipate issuing a production contract until January 1994. As a result, the Army now plans to achieve initial operational capability in April 1994, 6 months later than planned in December 1990.

Costs

Table II.3 shows the change in the Army's cost estimate for the program. The Army plans to buy 1,031 computers for active and reserve components through fiscal year 2001, 339 less than estimated in December 1990. The total quantity to be fielded by fiscal year 2001 remained essentially unchanged, at 1,381 computers. However, the Army adjusted the quantity of computers to be procured for CSSCS and reduced the program's estimated costs to reflect the planned procurement of 350 CSSCS computers under the MCS program.

Table II.3: Change in CSSCS Program Acquisition Cost Estimate from December 1990 through June 1992

Dollars in millions

December 1990	June 1992	Change
$436.2	$380.8	($55.4)

Forward Area Air Defense Command, Control, and Intelligence

The FAAD C2I is being developed to automate command and control of short-range air defense weapons. It is being designed to detect, identify, process and instantly disseminate information on enemy and friendly aircraft to forward area air defense units. This system has four major components: the automated command and control computer; the ground based sensor; an aerial sensor, called the masked target sensor; and an aircraft identification element.

Schedule and Status

In May 1990, the Army restructured its acquisition strategy to initially field an interim capability system to light divisions starting in September 1993, and deferred fielding a full capability system to heavy divisions until October 1997. This postponement is due to the unavailability of the required ground-based sensor and the delay in ADDS, which is needed to provide the data communications for the full capability system.

The Army, in January 1991, modified its 75-month, $173 million, full-scale development contract to provide for early fielding of a light division system capability in fiscal year 1993. The Army faced the problem of conducting a light division system test that was disproportionate to the value of the production decision. Testing costs were estimated at $22.1 million and procurement and fielding costs were $20.4 million. In April 1992, the Army reduced the length and complexity of the technical and operational tests. This reduced tests cost to $11.4 million.

According to an Army official, in September 1992 the Army plans to award a contract to provide for fielding the heavy division system capability in fiscal year 1995. The Army plans to make its full-rate production decision in November 1994 and to achieve heavy division first unit equipped in January 1995; these dates are 34 and 33 months respectively, earlier than planned in December 1990. According to an official, the Army was able to accelerate the program because less software was needed as a result of operational changes in response to the reduced Soviet threat.

Costs

Table II.4 shows the changes in the Army's cost estimates for the air defense program. Through 2001, the Army intends to procure 2,540 computers to equip its active forces, or 741 less than estimated in December 1990. The program cost decreased due to (1) the lower quantity computer procurement resulting from force reductions; (2) elimination of the estimated Army cost of the joint-service Mark XV aircraft identification element which was cancelled by the Air Force because of its high cost; (3) termination of two target recognition devices and the proposed aerial sensor component because the weapons systems they supported were cancelled; and (4) deletion of the estimated cost for a target recognition device that the Army incorrectly included in the program baseline but was never approved.

able II.4: Change in Forward Area Air efense Command, Control, and ntelligence Program Acquisition Cost stimate from December 1990 through une 1992

Dollars in millions

December 1990	June 1992	Change
$3,361.8	$1,649.9	($1,711.9)

Maneuver Control System

The MCS is being developed by the Army to provide automated assistance to help maneuver commanders and their battle staff at the corps-to-battalion level control combat forces. It enables the command staffs to collect, store, process, display, and disseminate critical battlefield information and to produce and communicate battle plans, orders, and enemy and friendly situation reports.

Schedule and Status

The program has incurred a 27-month slippage in initial operational capability since December 1990 due to software development problems. The Army had planned for the full introduction of the system using CHS computers, starting in June 1992, and to make its full-rate production decision in August 1992. However, these dates have now slipped to September 1994 and September 1993, respectively. By then, software changes in the operating system, revised graphics and mapping capabilities, and new force level control applications are to be incorporated into the system. In addition, the user has requested to extend automation to echelons below the battalion level because it believes that this approach will speed up the entry of critical data into the MCS data bases. If the Army approves this request, MCS costs will increase by yet an undetermined amount.

Maneuver Control System Non-CHS Equipment Status

Before the development of CHS, the system was composed of two types of non-CHS computers: a nondevelopmental item[2] and a militarized version. Fielding of the nondevelopmental computers to heavy divisions is to be completed in fiscal year 1992. These computers are to be upgraded and transferred to the reserve forces when the CHS becomes available for fielding in fiscal year 1993. The non-developmental computers were found to be unacceptable for fielding to light divisions due to bulky size and excess weight. However, Army officials said efforts to develop a light division MCS, as directed in April 1990 by the Army Vice Chief of Staff have been limited because the Army has not provided funding.

In July 1990, the militarized computer version that had been partially fielded was declared obsolete by the Army. The Army withdrew these computers due to their technological limitations; however, Congress directed that these computers be upgraded for expeditious fielding to the National Guard and reserve units.

Costs

Table II.5 shows the change in the Army's cost estimate for the MCS program. The Army plans to procure 4,135 computers to equip MCS users through fiscal year 1999, or 432 less than estimated in December 1990. This decrease is due to the projected Army force structure reduction. Program costs have decreased due to the reduction in computers required,

[2]A nondevelopmental item is any item that is (1) commercially available, (2) in use by a U.S. agency or foreign government with which the United States has a mutual defense cooperation agreement, or (3) any of the items in (1) or (2) that require only minor modification. Militarized hardware has been specifically designed and custom built for military use to operate under adverse conditions.

as well as the substitution at selected locations of the lightweight computer for the more costly transportable computer.

Table II.5: Change in Maneuver Control System Program's Acquisition Cost Estimate From December 1990 through June 1992

Dollars in millions

December 1990	June 1992	Change
$1,436.8	$1,011.8	($425.0)

Common Hardware and Software

The CHS goals are to simplify the Army's logistics, maintenance, support and training burden and to lower the cost for fielding an integrated set of automated battlefield command and control systems. The Army concluded that a single set of CHS will improve mission effectiveness by (1) reducing spare parts requirements, (2) enhancing continuity of operations and (3) reducing the need for operations and maintenance cross training.

The CHS contract, as originally awarded in August 1988, provided for three types of ATCCS common computers and peripheral equipment. These computers included a transportable computer unit, a smaller portable computer unit, and a hand-held computer unit. To take advantage of technological improvements, the Army decided to buy a larger capacity transportable computer with mapping capability, and a down-sized, hand-held computer with doubled memory capacity. The portable computer was found to be inadequate and no further procurement of that unit is planned. The Army plans to provide users with the transportable unit to replace the portable unit. A small lightweight computer unit was added to the CHS product line in May 1991. This unit is to be used at user locations that do not have the workload requirements to justify using the additional capacity provided by the larger transportable computer unit. Based on initial Army analysis, about 2,600 transportable computers will be replaced by the lightweight computer unit.

Schedule and Status

As of April 1992, about 3,557 computers have been delivered under the August 1988 CHS I contract for ATCCS segments. The Army plans to extend CHS I contract by one year to maintain fielding schedules through fiscal year 1994. Final orders against this contract will be placed in August 1994. The Army now expects to award the procurement contract for CHS II in June 1993, or 5 months later than initially planned. The first units to be delivered under this contract, which are to be used for testing, are planned for August 1993. The Army changed the contract award date to reflect that

the ATCCS segments did not plan to begin ordering CHS II equipment until fiscal year 1994. The Army plans to acquire from 7,000 to 11,000 CHS II computers for ATCCS over 5 years.

In May 1991, the Army awarded a procurement contract for the lightweight computer unit. The Army plans to buy 4,190 units for ATCCS. Through April 1992, 133 lightweight computers have been delivered for ATCCS. Final orders against this contract will be placed in fiscal year 1996.

Radio and Computer Interfacing Devices

The CHS contractor, as part of its product line, has developed the adaptive programmable interface unit, which is a data transmission interface device. The unit links the ATCCS segments' transportable computer units with the three ATCCS tactical communications networks and permits them to interchange data. The Army has procured 597 interface units primarily for use by the five ATCCS segments. No additional procurement is anticipated. The programmable interface unit's software required to link the tactical computer units with the ATCCS communications networks passed its technical test and was accepted by the Army on January 31, 1992. The Army intends to conduct the November 1992 MCS early user test and the May 1993 MCS operational test, using the transportable computer linked with the programmable interface unit for communication purposes, and to subsequently field this equipment.

The programmable interface device, to be fielded with CHS I transportable computer units to support the MCS segment, is an interim arrangement due to its weight and size. The Army plans to replace the fielded programmable interface device when MCS transitions to the CHS II hardware which will use the interface device developed for the lightweight computer — the tactical communications interface module. The interface module is significantly smaller, lighter, and faster than the programmable interface device and will be used by all ATCCS segments. The initial release of the interface module's software that links the computer with the communications networks occurred in March 1992; however, the production software release is not scheduled to take place until October 1992. The lightweight computer with its interface module will be tested during the MCS operational test. It is essential for meeting light and contingency force MCS requirements.

Costs

Table II.6 shows the change in the Army's cost estimate for the CHS program. The Army plans to acquire 12,244 computers for the ATCCS command and control segments, excluding ASAS, or 477 less than estimated in December 1990. The decrease reflects a reduction in the transportable computer unit requirements as a result of force structure reductions and the Army's plan to procure the less costly lightweight computer for many user applications instead of the costlier transportable computer, offset, in part, by requirements for the new lightweight computers. Although CHS procurement funds are identified below, actual procurement funds come from and are included in the individual command and control programs previously discussed.

Table II.6: Change in CHS Program Acquisition Cost Estimate From December 1990 through June 1992

Dollars in millions

December 1990	June 1992	Change
$1,366.0	$1,003.9	($362.1)

Army Data Distribution System

The ADDS is comprised of two systems, the Enhanced Position Location Reporting System and the Joint Tactical Information Distribution System. The enhanced location system is an Army-led program to provide a low- and medium- rate data communications capability for users at division level and below, such as artillery and forward area air defense units. The joint information system, an Air Force-led program, is being developed for high-rate data users, such as intelligence and air defense units in corps and divisions.

Enhanced Position Location Reporting System Schedule and Status

The program has remained on schedule. In January 1990, the EPLRS entered limited production for equipment to be used during the system's April-June 1993 technical test and the January-March 1994 initial operational test. Having successfully completed production verification testing of the initial limited production equipment, the first contract option to procure additional equipment quantities required for technical and operational testing was awarded in July 1990. In January 1992, the Army awarded the second contract option to procure the additional equipment required for operational testing. The Army continues to plan for achieving first unit equipped capability for the system in May 1994, and for making its full-rate production decision in September 1994.

Joint Tactical Information Distribution System Schedule and Status

In 1990, the Department of Defense, anticipating reduced budgets as a result of the reduction in the Soviet threat, directed the services to reduce their future budget requests by 25 percent. According to a program official, the Army, in 1991, decided to concentrate on EPLRS and eliminated all JTIDS procurement funding for fiscal years 1992 and 1993. As of December 1990, the Army planned to make a limited production decision in November 1992 and the full-rate production decision in October 1995. The Army now plans to make its full-rate production decision in September 1993, 25 months earlier than planned in December 1990. The production contract is to be awarded in fiscal year 1994, and field units will begin receiving production models in 1996. As previously planned, engineering development models will be used to achieve first unit equipped. This capability is now planned for September 1993, 1 month later than planned in December 1990. This schedule change is to align JTIDS' initial capabilities with that of the air defense segment's, since JTIDS is being acquired primarily to meet air defense requirements.

Costs

Table II.7 shows the change in the Army's cost estimate for the Army Data Distribution System programs. The Army plans to acquire equipment for 12 divisions and 4 corps. Program costs increased because the estimate was revised to include all outyear JTIDS component requirements. However, the increase was less than planned due to projected Army force structure reductions.

Table II.7: Change in Army Data Distribution System Program Acquisition Cost Estimate From December 1990 through June 1992

Dollars in millions

December 1990	June 1992	Change
$3,158.0	$3,365.5	$207.5

Mobile Subscriber Equipment

MSE is being acquired to provide areawide telephone-like communications to mobile and stationary users, including voice, data, and facsimile capability for corps and divisions. Consisting of radio telephones, switches, generators, trucks, and automated control centers, MSE is designed to interoperate with the Tri-Service Joint Tactical Communications System, combat net radios, commercial telephone systems, and allied communications networks. The system is more mobile, less labor-intensive, and more survivable than existing area communications systems.

Schedule and Status

The program has remained on schedule. The system was operationally deployed in Operation Desert Storm and according to the Army, it performed successfully. Fielding schedules had to be adjusted due to Desert Storm. However, the Army expects to complete fielding by December 1993 as previously planned.

Costs

Table II.8 shows the change in the Army's cost estimate for the Mobile Subscriber Equipment program. The Army has acquired equipment to support 2 training bases, 23 divisions, and 18 corps battalions, one air defense unit and four signal platoons. Program costs have decreased because total requirements changed, based on force structure changes. However, the Army purchased this equipment prior to the Army's plan to reduce the force structure to 20 divisions and therefore could not take full advantage of the projected reduction. The equipment will be redistributed to existing units to satisfy requirements for additional equipment identified during Operation Desert Storm.

Table II.8: Change in Mobile Subscriber Equipment Program Acquisition Cost Estimate From December 1990 through June 1992

Dollars in millions

December 1990	June 1992	Change
$4,602.7	$4,565.5	($37.2)

Single Channel Ground and Airborne Radio System

The SINCGARS will be used by all services and is to provide the Army with a new generation of lightweight, jam-resistant, secure, very high frequency combat radios. The system is being produced in ground and airborne versions and is to be the primary means of command and control for infantry, armor, aviation, and artillery units down to the platoon level. In the mid-1980s, ITT corporation was awarded initial contracts for the ground and airborne radios. In 1988, the Army awarded a second-source contract to General Dynamics Corporation.

Schedule and Status

The ITT SINCGARS radio program has remained on schedule while the General Dynamics SINCGARS radio program has slipped. In December 1990, the system was approved for full-rate production for the ITT radios, and limited production of the General Dynamics radios. At that time the Army planned to make a full-rate production decision for the General Dynamics radios in December 1991. This decision date slipped initially due to the time required to resolve an interface problem with the tactical fire direction

system and to analyze and correct acceptance test failures prior to the start of operational testing. Subsequently, the decision date again slipped due to radio reliability problems encountered during operational testing and the need to repeat that testing after these problems have been corrected. The Army is currently planning to conduct the required retest to support the production decision in January 1993.

Fielding of the radios started in October 1990 with the initial phase completed in September 1991. The radios were operationally deployed in Operation Desert Storm and performed successfully according to the Army. Fielding to first to fight units is continuing and is planned to be completed in fiscal year 1998.

Costs

Table II.9 shows the change in the Army's cost estimate for the program. The Army plans to acquire 150,000 radios through fiscal year 1998 to equip its first to fight forces. Program costs have remained unchanged since December 1990. The Army plans to acquire 63,000 additional SINCGARS radios after 1998, although the type and cost of these radios have not been determined.

Table II.9: Change in SINCGARS Program Acquisition Cost Estimate from December 1990 through June 1992

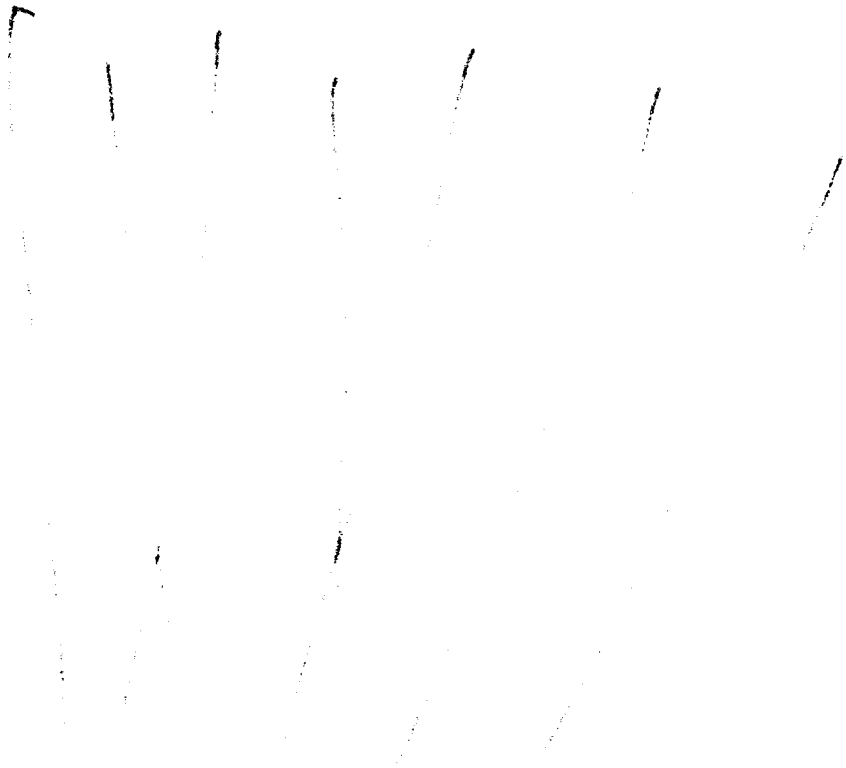
Dollars in millions

December 1990	June 1992	Change
$3,080.1	$3,080.1	$0.0

Major Contributors to This Report

New York Regional Office

William L. Wright, Assistant Director
Paul A. Puchalik, Evaluator-in-Charge
Manfred J. Schweiger, Evaluator
Robert G. Perasso, Evaluator
Angelia L. Collier, Evaluator



END

FILMED

DATE: 11-92

DTIC